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Designing and illustrating appealing 3D-characters for mobile devices

Creating 3D-character illustrations for a sports themed smart phon game project: ‘Bike & Seek’

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Tekijä(t) Otsikko Sivumäärä Aika	Shareef Abou Askar Vetoavien 3D-hahmojen suunnittelu ja kuvittaminen mobiililaitteille 44 sivua 15.9.2013
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Opinnäytetyön tavoitteena on tutkia 3D-hahmojen suunnittelua ja toteutusta mobiilipeleihin ja -sovelluksiin. Olen ollut useamman kuukauden ajan suunnittelemassa ja luomassa 3D-hahmoja, joiden oli tarkoitus esiintyä *Bike & Seek* -nimisessä älypuhelinpelissä. Hahmot oli tarkoitus ottaa jossain määrin myös osaksi pelin pelattavuutta.

Peliprojekti *Bike & Seek*, johon viittaan tässä opinnäytetyössä, oli osana Suomen itsenäisyyden juhlarahaston, *SITRA:n* järjestämää *Gesundheit*-kilpailua. Kilpailun tarkoituksena oli luoda älypuhelimelle tarkoitettu peli tai sovellus, joka kannustaa ihmisiä liikkumaan ja ylläpitämään terveellistä elämäntapaa. Suurin haaste, jonka kohtasin suunnitteluprosessin aikana, koski houkuttelevien ja mobiilialustalla kiinnostavien hahmojen luomista. Lisäksi haasteita tuottivat pelin urheiluteemassa pysyminen sekä kohdeyleisön, nuorten aikuisten, riittävä huomioiminen.

Oma osuuteni pelin tuottamisessa koostui hahmojen luonnostelusta ja suunnittelusta sekä yksittäisten hahmokuvitusten lopullisesta toteutuksesta. Näistä tehtävistä muodostuu myös opinnäytetyöni käytännön osuus. Haastellisimmiksi vaiheiksi projektissa ilmenivät hahmon persoonallisuuden luominen ja visuaalinen tyylittely. Tavoitteenani oli luoda koominen ja kohdeyleisölle mielenkiintoinen hahmo, samalla noudattaen tiettyä yksinkertaista visuaalista tyyliä, joka täyttää mobiilialustan visuaaliset vaatimukset ja ottaa huomioon sen rajoitukset.

Tämän kirjallisen työn tarkoituksena on antaa lukijalle tietoa 3D-hahmosuunnittelusta ja niistä tavoista, joilla suunnittelija voi soveltaa tietojaan ja osaamistaan täyttämään tietyn alustan, kuten iOS-mobiilialustan standardit samalla käyttäjät huomioon ottaen ja halutun teeman säilyttäen. Toivon vilpittömästi, että tämä opinnäytetyö tarjoaa sekä tuleville 3D-animaatio-opiskelijoille että muillekin hahmoista kiinnostuneille visuaalisen median opiskelijoille etumatkaa tarkoituksen- ja formaatinmukaiseen hahmosuunnitteluun sekä auttaa opiskelijoita löytämään keinoja hyödyntää omaa taiteellista ja teknistä osaamista millä alustalla tahansa. Kun tämä on saavutettu, hahmojen toteutuksen ei pitäisi tuntua kamppailulta vaan luovalta prosessilta täynnä mahdollisuuksia.

Avainsanat	Hahmosuunnittelu, 3D, Mobiilipelit, Älypuhelin

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The objective of this thesis circles around the process of designing and creating 3D characters for a mobile game application. Throughout a period of several months, I have been designing and creating characters that are intended for viewing on a mobile device and to some extent incorporated into game play of a game called “Bike & Seek”. The main challenge that I encountered through my designing process concerned creating an appealing character design and a product that could be pleasant and interesting in a mobile game. Other challenges that appear in this thesis concern the means by which an appealing 3D character can be created for a sport themed smart phone game intended for an audience of young adults. The game project *Bike & Seek*, which is referenced throughout this thesis, was part of a competition that goes by the name “Gesundheit” held by the Finnish innovation fund SITRA. The competition’s challenge indeed was to create a smart phone game or an application, which encourages people to exercise and maintain a healthy lifestyle.

The practical part of this project consisted of sketching, designing and creating final still images of the game character called “Jones”, this being my input for the game development team. The character’s personality and visual stylization happened to be the most challenging stages throughout the whole project. The objective was to make a comically interesting character for the target audience, while maintaining a simple visual style, which complements the device’s display.

As for the theoretical side, the purpose of this written work is to examine the world of character art and furthermore, the means of applying such knowledge and skills to meet the standards of a specific platform, like iOS hardware in my case, whilst maintaining the wanted theme and taking the users into account. All in all, the main purpose of this work is to give the reader a good head start on how to design and create a game character, taking its format and purpose into account. I sincerely hope that this thesis offers future 3D animation students, as well as any visual media undergraduates the sufficient knowledge on how to utilize their artistic and technical skills when it comes to designing characters to any platform whatsoever. Once that is achieved, designing and creating characters should not come across as a struggle, but rather as a creative process full of opportunities.

Keywords	Character design, 3D, Mobile games, Smartphone

Contents

1 Introduction

Appeal is an essential part of character design. Designing and creating characters inevitably requires qualities that include criteria, for the user and or viewer to identify with. In my case, throughout a period of several months, I have been designing and creating characters that are intended for viewing on a mobile device. The purpose of the characters will be further explained and clarified throughout the thesis

In the working field or moreover in the game and animation pipeline, designing characters and carrying them out in one form or another, usually consists of a couple, few or several different expertise. In my case as a student, I was approached by a group of former university student colleagues to be part of the graphical aspect of a game and maybe somewhat to be of help in the aspects, which concern 3D graphics. The project that took place for the past five months was part of a competition called “Gesundheit” held by the Finnish innovation fund “SITRA”.

We took part in the competition as a group of five members, each taking a certain task to accomplish the iOS game. Competitors can enter the competition by submitting a presentation of the entry – either as a video or a slideshow. There was also a possibility to submit the game itself in the form of an application. In that case, the app for mobile devices were to be downloadable from the apps store for the device in question by the last entry date, which was the fifteenth of August 2013. The presentation categories for the third to first place ranged with prizes from 2000 to 15 000 Euros, while in the game categories, from 1000 to 25 000 Euros. As enthusiastic as we were, we took it up as a challenge to reach both targets. In other words finishing a beta version of the game itself and having a video presentation or more of a promotional video describing the world behind our iOS game. So we embarked on an intensive five months of building up the basic structure for the game and used the last months of the work process also on video shooting the promo video describing our ambitions for our project and what we look forward to in terms of its usability and the growth of its popularity within the young and elder community of smartphone users. The advertised challenge was announced in the following way on Sitra's webpage: "Come up with a healthy gaming idea for Finns!”(Tuomi, 2013).

While submitting the promotional video by the last entry date, we had a solid

structured game, but we decided to work on it further, not releasing it yet to the public. Furthermore, taking into account the lengthy agreements that needed to be done with the app store to make it officially downloadable, it had to be postponed. This lessened clearly the chances of reaching a good position with only the presentation and therefore our team's idea didn't quite reach the top three candidates. However as we continued on developing our mobile app and its marketing through social media, we ended up being chosen for an Imaging Startup Program called "Nestholma", in the city of Lahti. This intensive three-month program helps startups develop their ideas into an outcome that investors and customers find appealing and attractive. We are currently grateful for that opportunity to develop our game into the market and to be part of the winter 2013-2014 batch, which includes a variety of other kinds of products and services of people from very different backgrounds. Without further ado, I shall get back to what my team's game is all about.

As already mentioned the game intended for iOS platform, goes by the name of "Bike & Seek" and is created for a target audience of young adults. Before I start on the character art and further more on how I applied this knowledge and skill on my work, let us observe the base ground of the game and its world. As already said, the target players being young adults, Bike & Seek can be described as a location based game, which circles around promoting a healthy green lifestyle for its players. Its main goal is to turn biking in your own city into an adventure-like experience, thus making cycling part of a fun game-like habit. More importantly, *Bike & Seek's* functionality is as goes: you are given a real-time map of your own town locating you (GPS-wise) as a player on it. Your given task is to bike around the town seeking for the hidden treasures scattered around your surroundings. When you find gold chests & useful artifacts, your character is accordingly boosted and enhanced.

However in Bike & Seek, the character isn't really the element of the game to be manually played with. So it is not to be animated as a character in a platform game or so, but rather as a locating point indicating where you are on the map and moreover, as an image in your player info window. This window/options' panel gives you a closer look on your character, standing with information on his or her stats as well as in the top list window, where you are able to view your rank amongst your friends, who play the same game.

Nevertheless when creating characters for a game like this which is made for devices

with a maximum of 1136-by-640-pixell resolution, one must take several things into account: the basic theme of the game, the main users of the mobile device or the so called game platform and the visual boundaries of the gaming device. These three important factors: ‘Theme, users and visual boundary” shall be mentioned throughout the thesis and thus accordingly verifying how they affected each stage of the process. This way you will hopefully grasp the notion of how to achieve appealing characters for mobile games in general. This also serves to keep the reader on track, when describing how the characters were designed and carried out into the final result.

Evidently as criteria, the theme, users and visual boundaries proved to be the biggest challenge in the practical side of my project too when it came to making sure these aspects were to be implemented in the character design. As for the theoretical aspect of this project, the main purpose of this thesis is to give you a good head start on how to design and create a game character whilst taking its format and purpose into account. Having said this, I suggest we embark on our adventure into the world of character art.

2 Definition of terms

iOS is a mobile operating system developed by Apple. It was originally created for the iPhone but later extended for other devices such as iPad and iPod touch.

Vector graphics is based on vectors (also called paths, or strokes), which are constructed of control points that represent locations. Raster format is what vector format has to be transformed to before it can be rendered it its final form.

Polygon in computer graphics is a two-dimensional shape that is modeled and stored within the software. The coordinates of its vertices define a polygon’s position.

3D modeling is based on processing a three-dimensional (3D) surface through specialized software.

Pixel is a physical point in an image, precisely a raster image ie. the smallest element of a picture displayed on the screen.

Autostereoscopy is a way of showing stereoscopic images without the use of 3D glasses. Also known as "glasses-free 3D".

LCD is a flat display with light modulating properties that use liquid crystals. The term derives from "liquid-crystal display".

Blender software is a 3D computer graphics software. It is an open-source free software for users.

T-pose is also known as a neutral pose when modeling a 3D character where the character is standing straight with its arms stretched out. It is usually easier to model based on a neutral pose having easy access to every part of the body while using symmetry.

Vertex (plural vertices) is a point that defines the corners of geometric shapes i.e. polyhedral objects in a 3D software.

Polygon mesh is a group of vertices, edges and faces that define the shape of a polyhedral object in 3D computer graphics and modeling.

Low-poly is a polygon mesh in 3D computer graphics that has a rather small number of polygons i.e. faces. Low poly meshes are needed usually for real-time applications (e.g. games). Meanwhile high poly meshes are used in animated movies and visual effects of the same medium.

Edge loops are a set of edges that are connected across a 3D surface.

Topology refers to the characteristics of a 3D object's geometric surface. Clean topology a 3D mesh with a good polygon distribution, efficient drawing of polygonal edge-loops, few or no triangular faces, and carefully considered creases that minimize distortion and stretching.

UV mapping is the process of creating a 2D representation of a 3D object, in which a texture map is projected onto the object. The letters "U" and "V" stand for the axes of the 2D texture.

Rigging is bounding the 3D model to a skeletal system of joints and control handles so that it can be posed.

Armature modifier is used in Blender software to build skeletal systems in order to animate the poses of characters or anything else that needs to be posed.

Automatic weights refer to the software assigning bones to vertex groups of the mesh based on its best guess. This feature is included in Blender software from Blender 2.5 onwards.

FK (Forward Kinematic) animation refers to the concept that positions of certain parts of the model or rig are calculated from the dominant orientation and position of the object. e.g. If we were to animate the wrist of a character, the location of the wrist would be calculated from the angles of the shoulder and elbow.

3D sculpting, also known as "digital sculpting", is the use of a software to manipulate (sculpt) a 3D object for instance as if it were made of clay.

Wireframe is a visual (wire) presentation of a 3D object.

Color correction is the "process of altering the color of the light for media that has to do with stage lighting, photography, television, cinematography and other mediums.

Alpha compositing refers to applying an image with a background creating partial or full transparency. It is usually rather practical when rendering elements in separate passes for a single composite.

Layer Mask allows us to set varying levels of transparency or editing capabilities for different areas of a layer/s. This is a common attribute in image and video post processing software.

Blending Modes are used when blending two layers are with each other. Blending modes determine also how the layers are blended. This is also a common attribute in image and video post processing software.

3 Character design

Most of you interested in this particular field in the video game and or the animation medium are probably asking yourselves: “How will this graduating student offer us the exact needed set of rules to apply when designing characters? Does he even have the needed experience to design applicable characters? What if he misses out on something incredibly essential for this process?” Here are my responses to the questions above.

“There is no exact set of rules or a so called one way for the outstanding world of character design.”

“I might not have enough, but I believe that we will always remain students in character design and we will achieve progress by learning. Therefore in addition to what I have practiced in the past six years, setting aside the experience I have from my work projects, I pass on to you my learned notion and knowledge based on works from talented artists and teachers in this particular field. Part of this knowledge was also gained whilst producing this written work.”

“Missing out huh? Well, I will give you the steps in the most chronological order possible taking into account all the possible projects I worked on as reference.”

Most of my given tips will be mainly discussed through examples of my most recent game project Bike & Seek. This includes the essential parts of the designs, the mistakes encountered during the process and how they were dealt with. This way of setting the smart phone -game as an example, should not turn the information you are about to learn into biased knowledge, but moreover a journey to learn from.

3.1 The archetype, his story and what makes him original

As human beings, we identify characters that are familiar to the world we live in. Nevertheless creating an original character doesn’t necessarily imply to come up with a ‘’never seen or heard of’’ phenomenon. The concept of originality is clarified, when the science-fiction author Orson Scott Card argues in his book *Characters & Viewpoint*: “As storytellers, we can’t stop our readers from making stereotype judgments. In fact, we

count on it. We know of and probably share most of the prejudices and stereotypes of the community we live in. When we present a character, we can use those stereotypes to make readers think they understand him.'' (Card, 1988. 8). Take for instance an extraterrestrial character like Steven Spielberg's "E.T.*"* himself or Ridley Scott's "Alien"; both uniquely intriguing fictional creatures that have left their marks in our popular culture. Consequently they set a common ground for how most characters from outer space came to appear like for the next twenty years in movies, animations, illustrations, plays and video games. Nevertheless they did not depict out of the ordinary traits that humans were not familiar with in the first place; maintaining four limbs, a head, a mouth, fingers, eyes i.e. the features we were already used to seeing in our daily lives.

This is what archetypes are all about. Bryan Tillman describes it discreetly in *Creative Character Design,* stating: "Archetypes represent the personality and character traits that we as humans identify with." (4). Every character design includes a hero and a bad guy in the world it is set in. Tillman adds also "a beautiful woman" as an addition to the two extremes providing a motive for the hero. Not to allow misunderstandings, we are allowed to have variations replacing the preceding three, which happen to be the most common ones.

When we take a look at this initial thought process in character design and compare it to Bike & Seek's character art, we can round off these archetypes: the hero being an "Indiana Jones" type of an adventurer, the villain being his current situation and his motive being finding treasures as well as improving his situation. This example should clarify the fact that our archetype can vary from the very standards we are used to; from a "someone" to a situation, a matter or any other element. Initially even these traits were not actually decided for the game character in the beginning of our design process, which brings us to the importance of the story element.

Creating the back-story for our main hero, allowed us to end up with these decisions on the character's archetype and hence what kind of a visual outcome I should pursue and maintain throughout the design process. Failing to perceive the general story for our game during the preproduction phase of the game design was the major error made by us as a group of enthusiastic game developers. This caused us clear setbacks when designing the main look for our character. For the player, "a regular character riding a bicycle" differs a lot from "a retired alcoholic archeologist, who embarks on a new adventure with his bicycle to retrieve the hidden treasures in the

metropolitan city". The player's attention and curiosity is clearly complemented and tested this way. Even though the story was never to be mentioned this clearly in the planned iOS game itself neither told with this detail to the player, this piece of information aided us in achieving the style and the personality of Bike & Seek's main and only character "Jones". The actual purpose was to help me in creating the protagonist character of the game. Moreover this is what makes our character original and hence different from the stereotype we are used to.

Let us have a look on the creation of the good old Super Mario. He is a character that has been a leading figure in the Nintendo Empire and a popular trademark in the industry resulting to be one of the most famous characters in video game history. Furthermore the idea of this portly plumber can be assimilated quite well with Jones' comical and adventurous figure. In fact in Mario's case the game play was for the first time designed around the story. The creator of Mario Shigeru Miyamoto tried to pursue a plot similar to the "Popeye-love triangle". Soon enough, a giant gorilla represented Bluto while Popeye was represented by "Jumpman", a carpenter jumping over barrels and climbing his construction site to rescue "Lady." When the character's story got shaped for the Donkey Kong project, it didn't stop there. Rather the character's image was polished by redefining his story to appeal for the international audience. So he went on from being Jumpman into Mario. Furthermore due to one of Miyamoto's colleagues, who thought that Mario looked like a plumber rather than a carpenter, Miyamoto put Mario in a sewer type of an environment for his third outing. (McLaughlin, 2010)

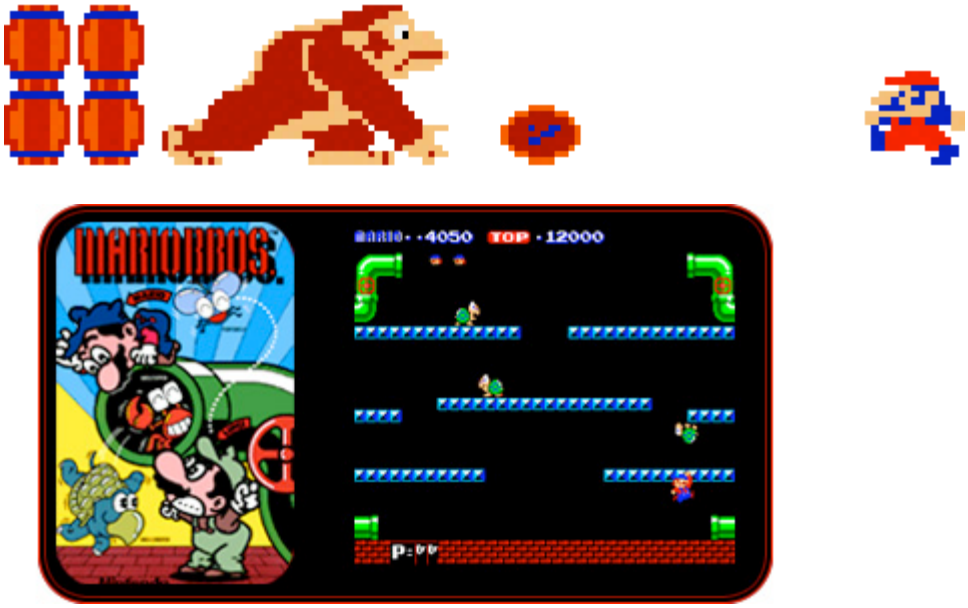

Figure 1. Initial appearances of Mario as "Jumpman" in the arcade game Donkey Kong 1981 and later as Mario in the arcade game Mario Bros 1983. As we compare these appearances, the purpose of Mario as an appealing character, changes drastically when first his idea is vaguely a carpenter leaping barrels thrown by a gorilla. Meanwhile in the later game when the story is more defined, the surroundings and the game play change, giving the character more personality and making him more interesting to the players. This proves the effect of the story on the overall game design.

In the beginning, brainstorming on different stylized concepts for the game's character; i.e. how our game character should look like, led me to painting numerous concepts, styles and versions of those styles just to illustrate how our 3D character could be portrayed on the phone screen. Then we came across the fact that we were actually trying various themes on the character without "designing" his or her story in the first place.

Figure 2. Initial sketches suggesting different possible themes (color coded) for the game character. Various different ideas had to be considered for the characters, from weird creatures to animals and see what works best in terms of style and appeal.

Figure 3. The concepts drawn before the background story of the game hero was worked on. The first concepts were based on stylized human characters both male and female. I found this rather liberating when it came to trying various shapes and colors.

That was when as a group we acknowledged this fact (better late than never) and started to act upon it. In our case, we created a document within our group's *Google Drive*, where each member of the group was able to suggest and brainstorm on different personalities and stories for the main character. What made this process rather effective was that our story sheet had real-time editing capabilities on the drive and therefore we were able to brainstorm a solid background story for our character within a matter of days, setting aside of course the refinement of the story. It is how we came up with Jones; a comical archetype of an Indiana Jones type of a character.

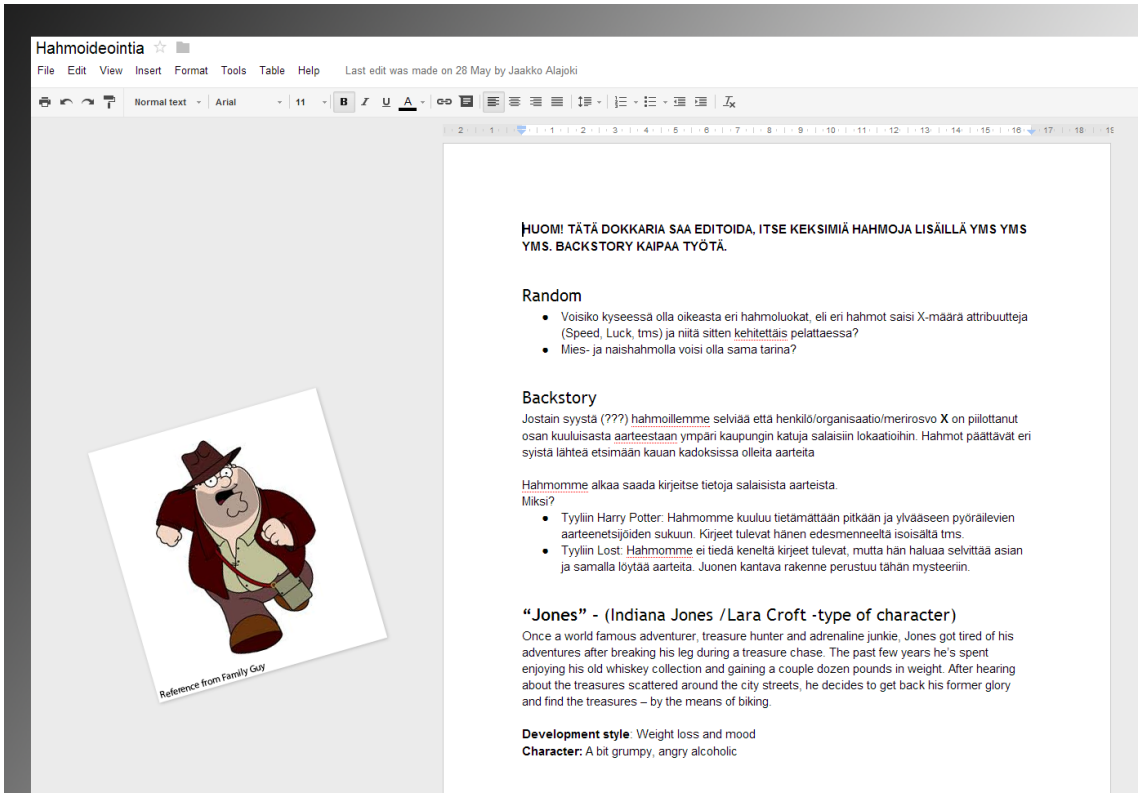

Figure 4. This is Jones' story sheet with the first picture reference to illustrate the idea. Jones' background is depicted as follows: "Once a world famous adventurer, treasure hunter and an adrenaline junkie, Jones got tired of his adventures after breaking his leg during a treasure chase. The past few years he's spent enjoying his old whiskey collection and gaining a couple dozen pounds of weight. After hearing about the treasures scattered around the city streets, he decides to get back his former glory and find the treasures – by the means of biking." Family Guy's version of the "Indiana Jones" -archetype was used to further support the idea.

Since the story is the most important part of the design; it is one of the ways that we can buy our character originality. As we already mentioned above that Jones strongly depicts an Indiana Jones archetype. Rather than looking on the contra side of the

matter and be afraid of using a stereotype that most people have preconceived ideas about, we can ultimately save valuable time and space that might otherwise need unnecessary description. On the other hand we planned as a group to give this character a touch of our own instead and challenge the player's interest and curiosity on that matter. Furthermore, since Jones happens to remind us of the famous adventure hero given to us by Spielberg, this time this person happens to be a retired overweight alcoholic version of the archetype in question. This way we are using the stereotype "to make readers think they understand him'' as we already mentioned. But on the other hand we notice that we are giving the player another challenge this time. That is to help Jones to get back on his feet with the aid of a bicycle. A writer by the name K.M. Weiland paints us the picture very well in one of her blogs by saying: "The solution is to *play against* the stereotype by crafting unique, realistic personalities that break the bounds of expectation. When characters act in ways the reader wasn't expecting, the reader's curiosity is immediately piqued." (Weiland, 2010). Nevertheless bear in mind that Jones is only the first character to be designed for the game with a variety of others to come. With busy work schedules in hand, we set a target for one character with three different development stages.

Similarly another way of bringing originality to our character is with shapes, silhouettes, colors and outlines, e.g. In other words, with a style of our own. Styles vary from extremely cartoonish to extremely realistic, but our own input also counts as a factor for originality. Now that we have the story figured out for our character, applying and experimenting with different styles should come out more smoothly and in a more practical manner. This is what we will be exploring on our next chapter of the thesis.

4 From concepts to blueprints

During the pre-production phase of *Bike & Seek*, I was put to the task of sketching and making various style and theme suggestions for the game's character. Meanwhile we also gathered a mood board of numerous concepts, illustrations and graphic art concerning modern cycling culture via *Pinterest* and *Gimme Bar*; two acclaimed web services for saving reference and inspiration. I truly recommend using one of the two for the sole purpose of collecting reference concerning any topic as a matter of fact. Their friendly usability and organized user interface have proven to be rather effective

and time saving for production pipelines like ours. Coming back to our topic on concept design, I managed to sketch different themes for biking characters as shown above in figure 1. However this was made before the story of the character was conceived, which is as shown the main reason for the character ideas ranging widely from each other. Back then we didn't know if the main character would be an animal, male, female or a monster-like creature. All that was sought for was how the character should be illustrated in the game itself. In my opinion this might have been the only clear error we made during the design process; looking for a visual style before knowing what our character is all about. That is something I truly recommend beginners to avoid when designing a character. We need to make sure that we have the character's story first before we set out to visualize him, her or it. I have clearly noticed that sometimes being creatively effective and time saving is all about the order one does things in. A solid story is a rather important tool for character design, whether it was several pages of biography or a few sentenced synopses. The script for the game and game play has to do with the game design itself and is something that should not be mistaken with the character's story or background info on the other hand.

Nonetheless we were able to agree upon a visual style that all of the group members thought would suit the theme of the game and would be appealing for current young adults to play in: a pointy, abstract and asymmetric character with exaggerated features and outlines. As for the textures, a colorful, retro 50's illustration imprint was something we thought would suit the bicycle, green and healthy lifestyle themes. The colored concepts in Figure 2 portray somewhat the style.

My work process during the concept phase consisted of sketching, illustrating in Adobe Illustrator as well as color correction and texture application in Adobe Photoshop. That was essentially how I tried to illustrate how the characters appearance in 3D. You might be wondering now, why I avoided brush painting any depth into the character e.g. in Photoshop to illustrate the effect of 3D in the concepts. In fact the game character was planned to be a 3D model, but to appear as a cell shaded two-dimensional picture in the resulting render; at least for the clothing, that is. This way we have a simple almost solid colored character with only shapes of his silhouette to emphasize his personality and structure. Hence this proves to be suitable and appealing to be viewed on a mobile screen in my point of view.

As a back-story was being designed for our first character, things started to shape up for me in a quicker and smoother manner on paper and consequently on the computer screen. Particularly when it came to implementing the visual style sought for the character. The steps and the techniques were clear at this point, since they were already examined and evaluated during the earlier concepts before the back-story was even made. These included scanning the sketches that I initially drew on paper, illustrating the main shapes with solid colors and refining the silhouette to the position that illustrates the character best by moving vector points. When this was done, only two other tones where drawn as shapes above the base color, one as a highlight and the other as a shadow. The overall shape of the character was kept as plain as possible in that sense that it only depicted main outline of the body in a comical manner. It was a rather appealing style for me as an artist to implement into a mobile game. In other words I was very interested in fulfilling this particular character stylization for *Bike & Seek*. This design has the basic retro simplicity in it, which takes influences from early Hanna-Barbera character art and many others in the same medium during the late 1950's and 1960's. I wanted to practice and achieve a similar look through 3D and mainly, because I simply thought it would complement the game play through mobile devices such as iPhones and would also support the interest of trendy, cycling mature players. Nevertheless it's a pleasant style for all ages and genders to play with.

Since the character's background story and the desirable art style was clear to me, it created a clear path for me to pursue in the designing process; hence allowing me to make fast draft images to enhance the concept of the final look. In fact various drafts were made repeatedly until the desired result and personality of Jones was achieved.

Jones is not only a funnier and clumsy version of the known archetype himself, but one with an even more substantial ego than the typical Indiana Jones we are used to. While the retired middle-aged adventurer is trying to ignore his love for some whisky now and then, he still lives the illusion of a once great explorer. His extreme self-confidence and lack of sound reason make him the Don Quixote of his era. The player's task is to help him achieve his goals and find the treasures, meanwhile shaping Jones into the image he sees himself as. The player's character is Jones and in order to become the cooler version of the game hero, the players have to use their bicycles literally to discover the treasure in their surroundings through their smart phone. Moreover their character levels up physically into better shape as the player reaches a certain level of

achievements. Consequently Jones could end up being the hero like adventure figure that he always has envisioned himself as.

Initially we had planned with the game development team to create three different images of Jones illustrating three different stages of advancement in the character as well as for the player in the game. The objective concerning how many versions of the character there were to be was based largely on the scarce time we had been given until the deadline of the Gesundheit -competition. The offered schedule was a rather strict one that we planned to model the 3D figure of Jones only for the first level and to modify the same mesh according to the concepts of the two other levels. This is a step that we will observe more closely in the next chapters.

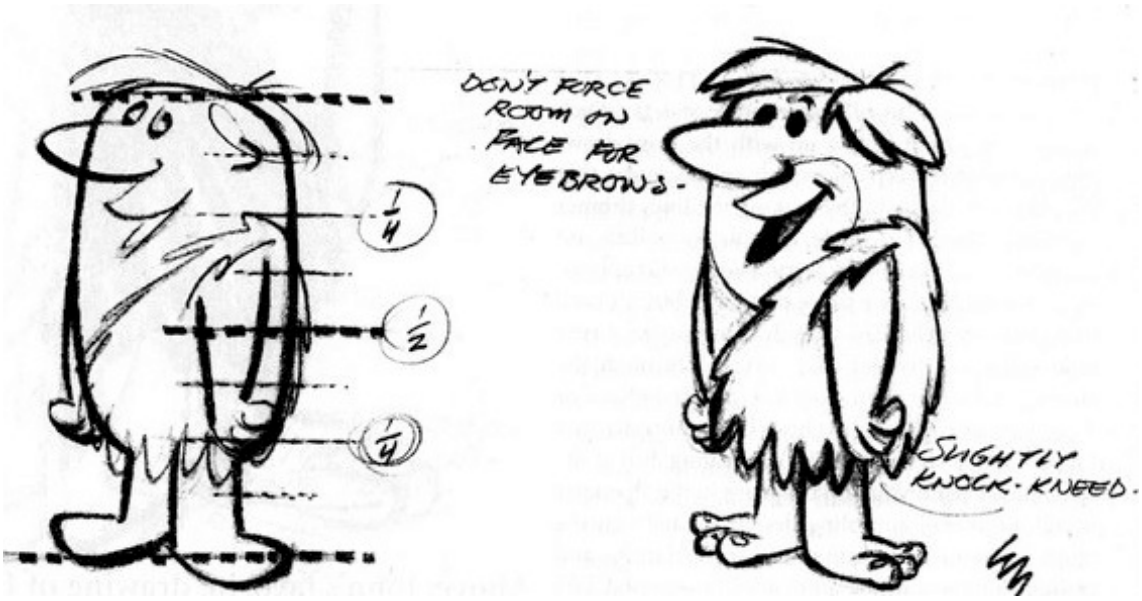

Figure 5. These are the animator Ed Benedict's drawings of Barney from The Flintstones. A similar approach was taken on the shapes' simplicity for Bike & Seek's Jones. As seen the character is constituted of a single round shape including the head being part of the shape leaving no particular definition for his neck. Even his short four limbs do not leave the gestalt of the body, making him comically appealing for the audience while maintaining a perfect balance in symmetry of the character design (evenly divided parts of his height with the same width all over).

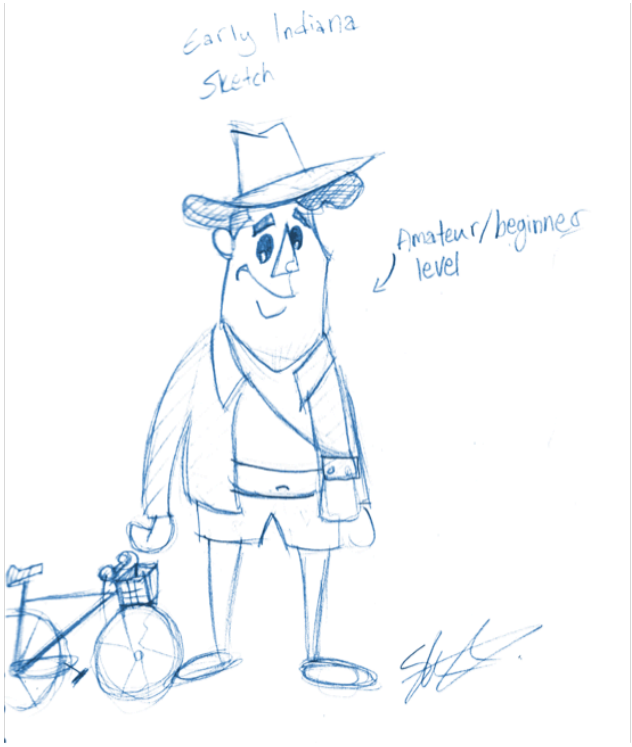

Figure 6. The first character sketch of Jones takes a rather big influence from Ed Benedict's designs. The whole upper body constituting of a single round shape seemed suitable for Jones' clumsy and comical characteristics.

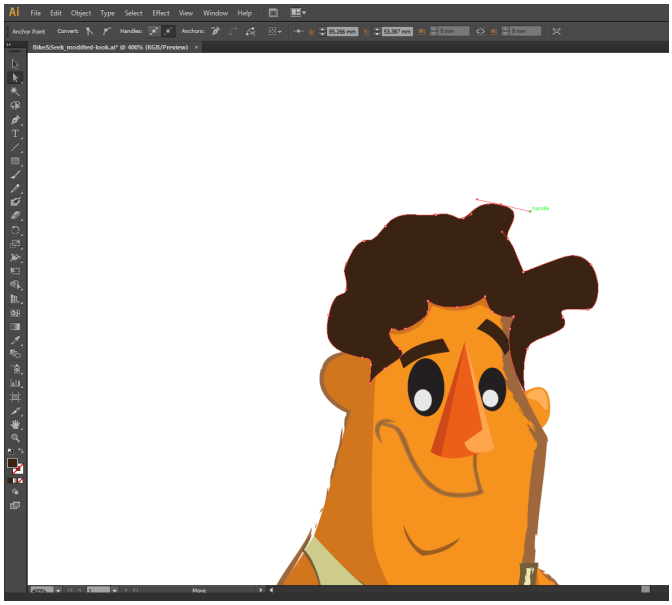

Figure 6. Illustrating the shapes in Adobe Illustrator using the pen tool, made it practical to achieve simple roundness, whilst keeping certain edges of the character pointy. It was also rather handy when it came to applying customized strokes with different thickness for different parts of the character.

Figure 8. This is how the earliest 2D concept of Jones turned out to be. The character was a little too similar to Ed Benedict's Flintstones character designs, leaving out some of the characteristics we had hoped for Jones. Among these characteristics, were to create more of a scrawny and comically egoistic personality, maybe with longer skinny limbs supporting the biking habit.

Figure 9. Here is a second draft of Jones, emphasizing a bigger head in proportion to the body with more abstract and humorous facial features. Masculinity was something that was looked for in these sketches

Figure 10. These were vector illustrations and post processed concepts of the second draft. As you can see the color palette and the shaping of Jones was already beginning to shape up to what we were looking for.

Nonetheless we were trying to add a little bit more life into Jones's character by refining his facial features, meanwhile keeping with the general posture of his body that was already laid out in the several previous character concepts. We wanted to show his egoistic and vibrant personality by making him facial features that could portray expressions of extreme joy, madness, anger, disappointment and self-confidence etc. The following sketches illustrate the refined features of Jones and the t-pose that was finally used for the 3D modeling phase.

I mostly concentrated to make sure the blueprints illustrated a clear t-pose of the character, showing as simply as possible his silhouette. Since clear outlines were set out for the front and side view, it made the modeling process much easier and more flexible, especially when trying to keep with the original 2D concepts of the character. Sometimes 3D visualization of a character or even an object might lead to more detail or realism being created even when the artist is intending to keep up with original look. At least based on my own experience, this used to happen occasionally when trying to create a three dimensional version of the original hand drawn artwork. Some details that weren't included in the original concept were in turn modeled out from my sole

imagination just because of the vast opportunity given by 3D modeling software to create such details into the product in a much flexible manner than 2D illustration. That is usually why these details would not have come up or been thought of during the design phase. We might subconsciously avoid sketching the details for an art piece knowing that we are going to model it in 3D software after all, where these details could be practically made with various techniques and tools. Hence we are neglecting as much of an important step of our production as any other. For this basic reason it is truly recommended first and furthermost by all artists working in the video game or animation pipelines as well as me to conclude a thoroughly designed blueprint of any 3D artwork that you are about to do to save time and keep up with the original concept of your design. This way the workflow proves itself as more effective and unnecessary delays are avoided.

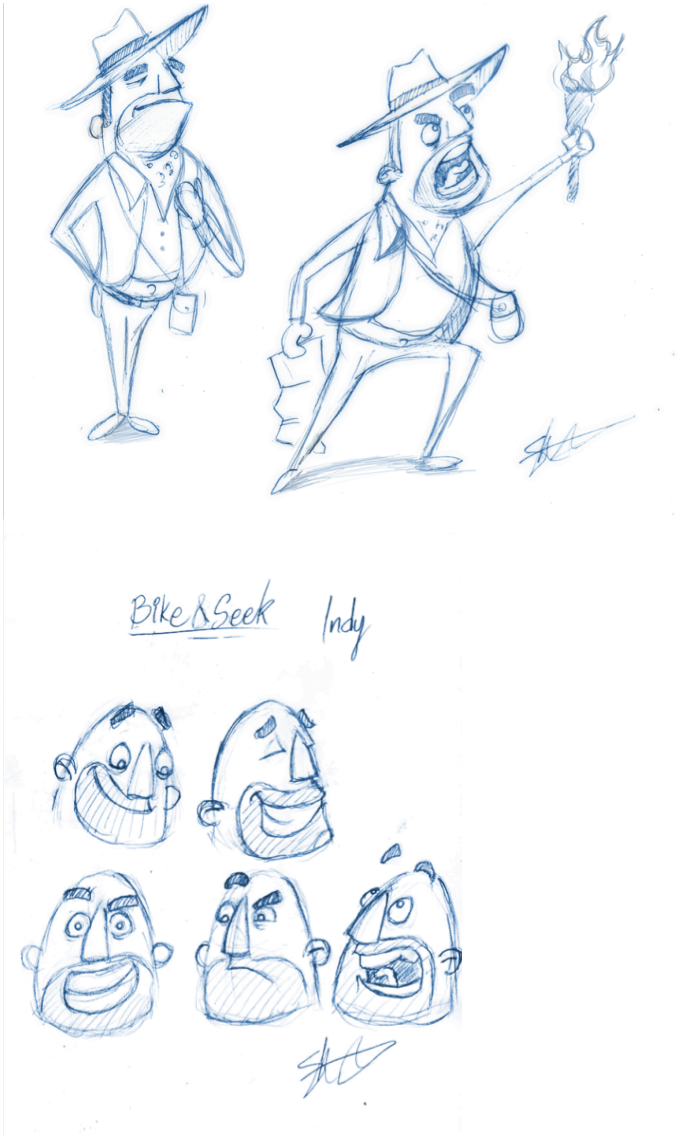

Figure 11. Drawing the expression sheets for Jones helped me mostly when shaping his personality. This held true for the 3D modeling process of Jones, since it was a rather good guide when deciding where to emphasize polygonal detail especially in the facial area.

Figure 12. This was the actual t-pose that I drew to serve me as a blueprint when beginning to model Jones for the shape that he was supposed to represent in the first level's picture. Roundness, even in the eyes, was the overall motive when it was about Jones visual outcome. This was greatly contrasted with skinny long arms and legs that actually had a purpose in the case Jones was to be put on a bicycle reaching the handle with his arms and the pedals with his legs.

4.1 The significance of concept design for Jones in Bike & Seek

In our case a thorough concept design was something to be proud of. We had the shape, outfit, shading and texture of Jones already planned out, in other words his 3D outlook was rather clear at the beginning. Similarly this played out as an advantage lessening a lot of the obstacles that could have been encountered without a clear path on the character design.

Another phenomenon that plays in the advantage of concept art is its significance as reference. Going straightforward to creating a model without any particular reference to

work with can make it harder and has nothing to do with the artist's creative skills in 3D modeling. When you are part of a video game project, where you are carrying out the character design and creation from A to Z, refusing to work without reference just shows negligence and stubbornness from you as an artist. This in fact is a matter that I used to indulge myself with before as a younger student. Consequently when you try drawing things on paper and illustrate your idea further digitally before beginning to model, you could be surprised by the results of your final design. Therefore character concept design in my point of view is the pillar of the actual character production pipeline. We can assume that concept artists for video games apart from other industries started becoming more important in the late 1980's when games were gradually moving from asteroid and ping pong type of projects into adventure games with more depth into their storylines, for instance "Monkey Island" and "Battle of Britain".

What I am about to explain through examples might just illustrate the fact of concept art's importance in a field of video games. The following images illustrate Sega's famous Sonic The Hedgehog's gradual transition from early napkin sketches into the final design credited by Sega to have been created by Naoto Ōshima & Hirokazu Yasuhara. Now that this is illustrated in stages as shown below, we can see more clearly how the concept influenced the final design.

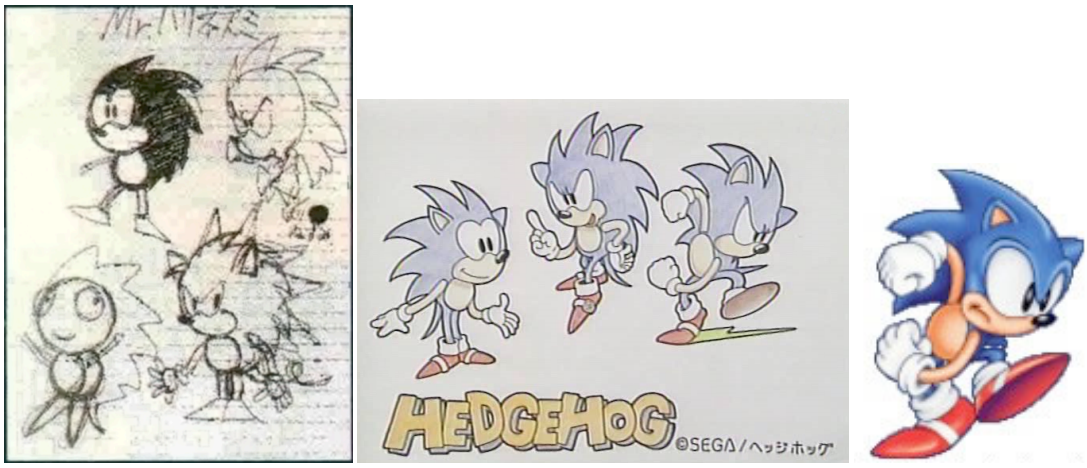

Figure 13. These represent the original stylized character designs based on a hedgehog by Naoto Ōshima.1991 or earlier, that turned out to develop (from left to right respectively) into the fast and fierce character of Sonic. We can see the transition of the design and how the each version takes elements from its preceding concept.

5 The impact of the mobile devices' platform on the character design

Since Bike & Seek was developed for a cellular phone, moreover a smart phone, some valuable points on phone devices had to be acknowledged and taken into account in the character design. In his book *Character Design for Mobile Devices*, which is one of the rare good books on this topic, Lawrence Wright (NFGMan) states acutely how cell phones' popularity in gaming has increased rapidly in the past years: "Many people are playing games on their phone more often than making calls." (Wright, 2006. 46). According to a UK study making phone calls is presently the fifth most popular activity among smart phone users. Playing games ranks higher in popularity; proving that more and more people use smart phones for gaming than to make calls.

Smart phone activity	**Minutes per day**
Browsing the web	25
Using social media	17
Listening to music	15
Playing games	14
Making calls	12
Writing emails	11
Sending texts	10
Watching TV and movies	9
Reading books	9
Using the device's camera	3

Table 1. Cell carrier O2 survey July 2012 on the top 10 uses for smart phones. When playing games ranks higher than making phone calls on mobile phone devices, we can predict how it correlates with making appealing games for the users and thus these games must naturally include appealing characters that take the user's attention and admiration.

David Johnson, O2 UK's general manager of devices, made the following remarks on this particular phenomenon: "Smartphones are now being used like a digital 'Swiss Army Knife', replacing possessions like watches, cameras, books and even laptops. While we're seeing no let-up in the number of calls customers make or the amount of time they spend speaking on their phones, their phone now plays a far greater role in all aspects of their lives." (Clare, 2012). Indeed gaming also takes a bigger role in most adult's lives not just true gamers, but most people with mobile devices.

5.1 Social gaming's impact on the visual orientation of the game character

The rather outstanding statistics just prove how much there is to be invested in this particular industry segment; social gaming i.e. Such a booming industry creates competition in appealing to smart phone users. One could ask: who are these smart phone gamers? Even though Bike & Seek could be played by most ages, our main target market happens to be young adults. However that doesn't necessarily mean a small segment of present social gamers at all. To our astonishment it happens to be that a 2010 Info Solutions Group study conducted on behalf of PopCap proves that the average gamer is in fact a 43-year-old woman. According to the analysts one of the major keys to this is the accessibility of social gaming. Furthermore since a mother doesn't have time to sit in front of a PS3 for hours, they can sneak for a 10 minute social gaming while doing online errands such as banking or during their baby's nap for example. Another element of social gaming that attracts older women is the very social aspect of it. "68 percent of women are more likely to play social games with their real-world friends, while 46 percent use them as a way to interact with relatives." (Knowlton, 2010)

So what can we perceive from information like this, other than that it is ultimately necessary to be able to create visual game appeal for this unique sector of gamers as much as to any other player. This goes for the character design as well. Jones ended up in fact according to Bike & Seek group's plan as something that could be related to and liked by many of us. A humorous version of Indiana Jones could hardly bring disappointment to anyone especially young adults who have known this archetype since their childhood. One minus that I had personally noticed when creating Jones based on the request of the group, is that a fun like app like Bike & Seek that

encourages people to go cycling, might actually be stylistically more suitable for funny looking characters that are based on an avatar of the player himself, i.e., flexible visual options that can be related to by anybody rather than a “Hollywood archeologist”, who is more appealing to movie and popular culture enthusiasts. Nevertheless when the members of our group agreed upon the story of Jones, my primary obligation was to give life to the idea. A game like Bike & Seek lacks the element of being rather serious in its visual style, but would rather accentuate the fun side of the game with its simplistic retro feel i.e. stylish and funny visual orientation; hence the encouragement to start practicing sports and seeing it as a fun like habit of gaming. Games with simple visual styles and rather colorful childish game environment can yield a relaxing fun gaming experience for matured players as well rather than including serious depth in their storylines or the visual detail. Games like Farmville and Candy Crush Saga are perfect examples for this point. An article published in Tech Vibes, interprets the boom of the current social gaming industry as follows: “Zynga alone generates more than half a billion dollars in annual revenue through social games like FarmVille—which has become so popular, it spawned a For Dummies book—and more and more startups are flocking to these social games.” (Knowlton, 2010). Therefore Jones had to assimilate all of these features; a visually simple character, with distinctly highlighted simple shapes, exaggerated posture and engaging strong colors. It makes him in easily approachable in my point of view and moreover good to look at from a mobile device’s screen.

5.2 Smart phones and the visual orientation of the game character

If one compares current smart phone devices or even older cell phone versions to previous portable game systems like Gameboy Advance or PSP, one can conclude that current phone devices have placed more power in the user’s palm than entire computers less than twenty years ago. Therefore it’s not too surprising that present smart phone users want to do more with their phones and when it comes to games, they tend to have higher expectations from the gaming experience. Visually speaking recent phones can offer a good screen resolution and higher graphics for games than ever. As a matter of fact social games thrive with more detail and 3D graphic possibilities as they compete for user appeal. The smart phone’s preceding slim line cell phones were also attractive because of their practicality and cheapness. Most of the people would play games with their phones instead, since they didn’t even

disappoint in the visual sensation either. NFGMan describes briefly the properties of cell phones in his book *Character Design for Mobile Devices,* as offering: “better-quality screens capable of more colors than any portable game system excluding the very newest, and they are very cheap.” (Wright, 2006. 46). Although smart phones might be slightly more expensive, still they are the currently used by many and contain yet better visual possibilities. The same applies to the current iOS and Android platforms for which Bike & Seek was produced. Nevertheless smart phones contain very practical and sensitive tap and swipe capabilities, which bring a whole new aspect to the gaming line. All of these aspects happen to be rather crucial when it comes to creating the visual outcome for the game. Jones was to appear in the player’s bio or status window as a full character showing the stats of the player; a picture covering a 1136 x 640 pixel resolution living up to iPhone 5's visual requirements. He was also to appear as a cursor object (showing only his head) in the map viewport, which the player needs when biking around and navigating for hidden treasures. This made the 3D graphical demands quite specific in terms of being rather visually clear, simple and distinguishable as the player on the map, while being visually interesting, vibrant and comical when seen closer in full body image. Since the character wasn’t made to be animated at all, serving the only the purpose of portraying the player’s profile, it gave more way to visual detail. But still the portable screen size had to be taken into account and therefore Jones was to be a character spotted and admired while being viewed from a distance of a couple of meters. The tools and technical means towards achieving this goal will be observed more closely in the next chapter, where the reader can also acquire a clear insight on 3D modeling and image processing their character properly for a small resolution as well as a bigger resolution platform. Furthermore the primary target of the chapter is to reflect upon my technical process in creating a 3D character illustration that looks visually appealing on a poster as much as on a phone’s screen.

6 The process of producing a 3D character illustration for a mobile device

When it comes down to creating a character illustration for any visual platform, it rounds up to planning a certain workflow that works best for its purpose and solving the technical obstacles that are encountered throughout the process itself. This was my

perception of the whole main production process and having said this, I and the rest of the production team kept in mind the following fact; our main visual platform in Bike & Seek will be a smart phone. However the character would not be moved in a 3D space by the player/user nor would it be animated in any part of the game. Jones' idea was to illustrate the player's stats or level through different pose pictures as himself in three main levels; beginner, mediocre and champion. One rendered camera view for each level was enough. Another was a picture of Jones' face on the cursor representing the players position on a map, but this eventually ended up being a 2d vectored illustration of the face, which I also illustrated.

The target of Jones' visual appearance as a 3D model was to maintain the same simplicity as in the 2D illustrations keeping in mind the screen restrictions we looked over in the previous chapter and how it is essential to have a character to stand out in such visual boundaries. Therefore it was planned for Jones to be a low poly model with a distinct exaggerated silhouette, contrasted cell shading and powerful expressions. Let us take a look back at the previously studied example of Super Mario. This helps us to maintain a homogenous approach to Jones' character development in comparison to a similarly developed comical character like Mario and hence for the reader to apply this notion to any character creation for mobile game devices, whether cartoonish or realistic.

Originally Mario was designed to stand out as a character with none other than 14 x 21 pixels. (Wright, 2006. 114). As we saw in Figure 1, we are able to identify Mario as a small pixel character just through simple shapes and contrasted three color-coding defining his mustache, overalls and hat. Therefore we can notice that the character has a simple, but distinct style, which is pleasing to see even in small screens. Mario has maintained this simplicity even when going through visual transformation towards being a 3D character in Nintendo 64's Super Mario 64 up until Super Mario 3D Land for Nintendo 3Ds. This continuously proves the importance of aesthetic simplicity in a character when expressing a certain style or art form and especially in visually limiting devices like a phone, where too much detail might not be always the best option.

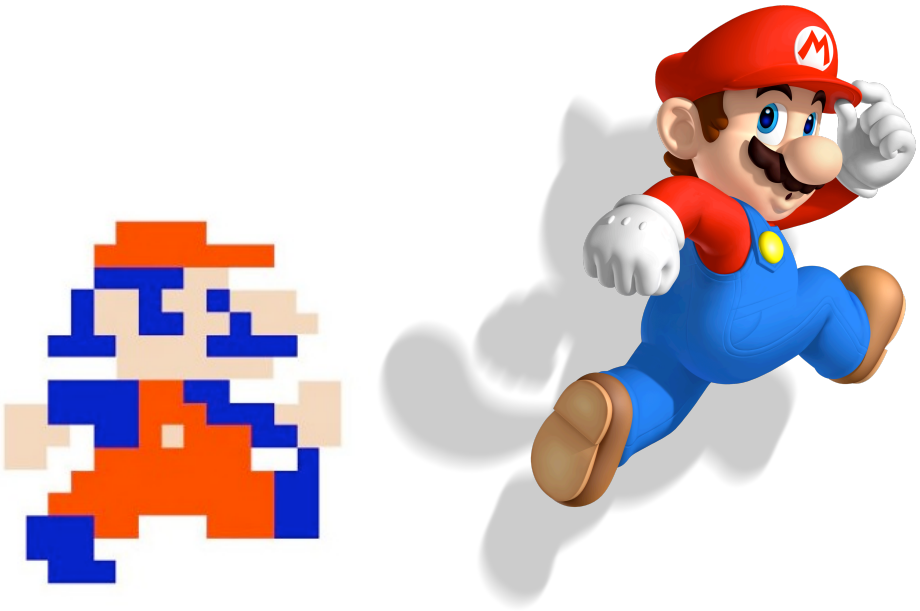

Figure 13. In the picture above, one can see Mario's major visual evolution portraying the first version of him as a pixel sprite in 1981 Donkey Kong next to the 3D version of the character for Super Mario 3D Land released in 2011. One can notice how the visual aesthetics have kept their consistency all the way. Even though the character differs visually in terms of the dimensional possibilities that were available in time, the aspects of Mario like the simplicity of the shape and shading still remains the same to some extent. Super Mario 3D Land was released for Nintendo DS, a Gameboy –like mobile gaming device with a 3.5" autostereoscopic (3D) LCD 800 × 240 screen display.

6.1 Transforming the character concept into a 3D visualization

The 3D software my colleagues and me decided to work on was Blender software. It is a solid and powerful free open-source 3D modeling software that me and my other group member, who was responsible for the character's shading and rendering settings, already had experience in from previous projects. This was also a financial solution, which allowed us to avoid license costs that would arise from other production software, if the game were to be marketed in the future. Moreover to remind the readers; the purpose of my work on Jones was to make still illustrations that were to be viewed merely as stage bio or profiles in the game itself. The character didn't have to be modeled along any video game modeling guidelines. That is, the polygon target amount had to be low, but the model's mesh was not transformed into triangles. Since the character wasn't supposed to be controlled in real-time by the player, the model

wasn’t made for a game engine, but rather for basic illustration purposes. Jones wasn't even meant to be animated in the game's screen; just a mere avatar like picture allowing the player to follow his or her advancement throughout the game.

I had a clear style guide to follow during the modeling process. I began modeling Jones according to the t-pose blueprint represented previously in this thesis. The blueprint represented the body of the character's beginner level; a slightly chubby and round cartoonish male character. This rounded up to be a simple mesh with an approximate of 3 510 polygons, including Jones’ hat and eyebrows that were separate meshes.

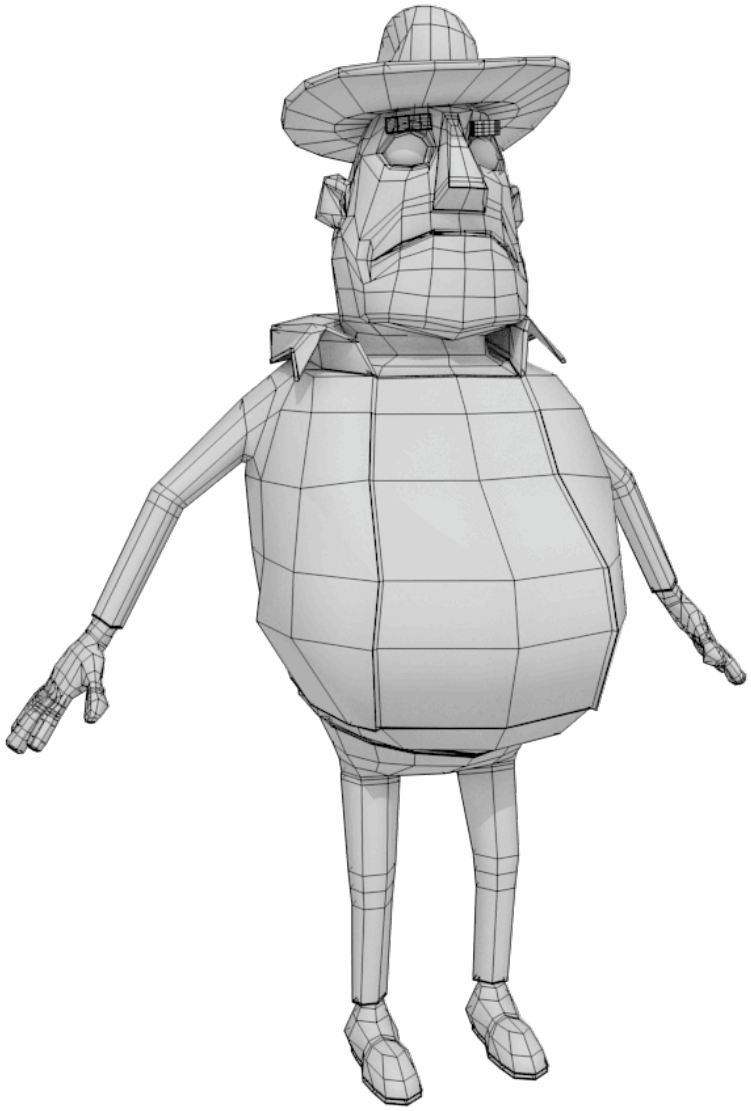

Figure 15. This represents the low poly -version of Jones' first level appearance. The model consists of around 3 510 polygons as a low poly character. Nevertheless Jones was smoothed for the final render images, where he was posed.

The modeling process began from the character's head, which was to be the most detailed part of the body although rather simple. But it constituted of around 13 percent of the whole mesh in the amount of faces (443 faces, excluding disconnected parts like Jones' hat, eyebrows and eyeballs). This allowed a variety of facial expressions to be modeled for different staging or even for them to be animated in the future. I began modeling the head traditionally from a cube of four loops cutting the cube from its width, height and depth, gradually adding more loops to define the shape more clearly. Additional loops where drawn separately by me by the final stage of the head to redefine the loops of the face to support a correct face topology for the character. Not to go to deep into technicalities, as it is not the key topic of the thesis, but for the students and readers not familiar with the term 3D topology, it is an aspect that needs to be taken into account when modeling any character. The same rules apply to all forms of detail, that is, cartoonish or realistic. In this case a neat topology of the face allows the character's facial expressions to transform in a more natural manner avoiding any visual glitches or mesh deformations. Eventually the same applies to other parts of the character's body.

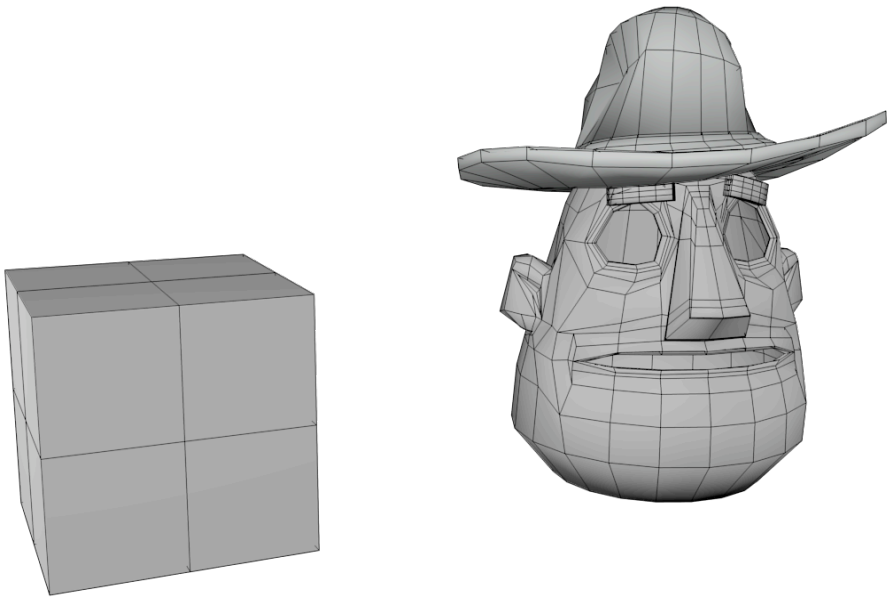

Figure 16. I began modeling the head of the character traditionally from a cube with 24 faces, defining the targeted shape and then gradually adding more loops for the details that I had to achieve.

The body constituted of a rather spherical middle part with four thin cylindrical limbs. The division of the loops along the 3D model was quite discreet maintaining the character to low poly. More loops were concentrated in such places like the seams of the character's jacket that was modeled as part of the whole body rather than separately. The idea was to render the character with modified solid shaders. So modeling a character from one mesh and applying a multiple slot material with different shaders was a very practical way to achieve the sought simple visual outcome. By this I mean a material that is structured to have various slots of shades that when applied on a 3D model, each slot can be determined to affect different faces or segments of the model. The only separate parts of the body were Jones' hat, his bullwhip and his eyebrows that where easily repositioned later on in the 3D renders of the other different stages. As for the material settings, I have not much to say, since it was not part of my tasks and neither was the lighting or rendering of the character. Our second 3D artist was responsible of these parts in our production. For all that I was concerned about was to make sure we achieve similar simple shading for the character as I had previously painted in my concepts and that was what the other group members had hoped.

In a critical schedule, the decision to render Jones with Blender software's built in materials, was also part of the production plan to avoid UV mapping and producing textures in an image processing software and working with them in the 3D software. This shorter process in turn prevents the additional lighting and rendering qualifications that come with it. More importantly a painted or a photo texture was never part of Jones' design. Since specific poses were to be rendered for each stage of the player's level, Jones was rendered out of the 3D software with shading that most predicted the base color of the actual designs. Consequently the rendered image was painted on in Photoshop to be rendered into its final form of illustration.

One of the practical sides of Blender software was the armature-rigging modifier that allowed me to draw a quick biped skeletal structure on the 3D model of Jones and consequently skin it and move it into the sought position for the render. Blender's armature feature is impressively effective in adjusting automatic weights into the 3D model of the character so that little weight painting was even needed for Jones. The rig consisted of 55 bones and I thought that this would be a decent amount to get Jones

into my planned positions. The only difficulty in the rig was that since I hadn't created any controller for different parts of the body, the bones had to be manually moved and rotated. It didn't still cause any complications, since the bones could be made from the armature's display properties to be seen as an x-ray through the model and controlled practically this way. The armature was only made for the sole purpose of positioning the character for render. In fact setting up a more complicated and flexible rig with controller settings etc. would have lost us some time, taking into account that none of us were rigging experts, moreover us the 3D artists in the group.

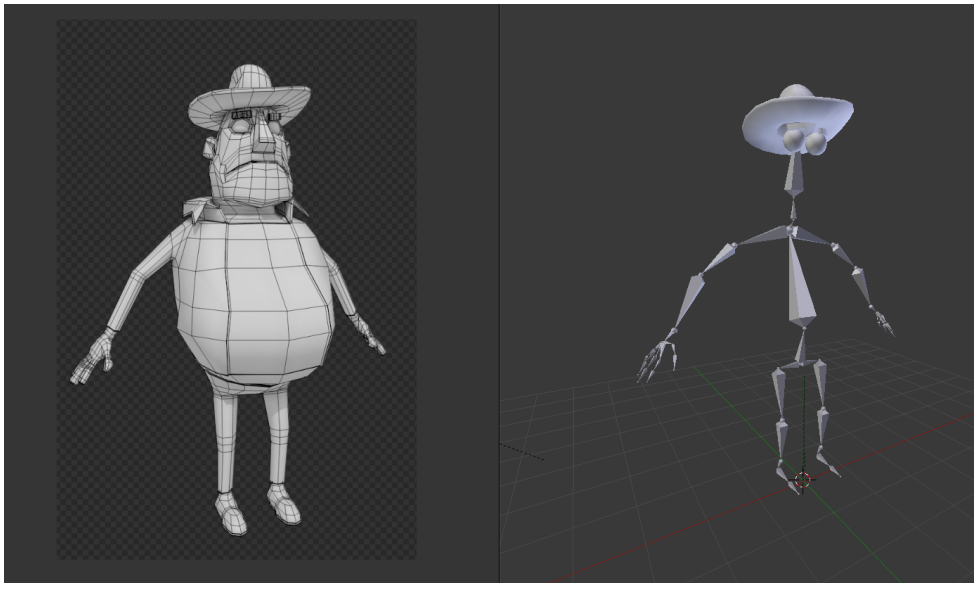

Figure 17. The armature –rig consisted of a fair amount of bones, just about enough to get Jones posed for rendering. The rig did not have any controller settings. So different parts of the body had to be moved in a forward kinematic manner. It did not take much time to pose the character and was rather easy to reposition him when test rendering.

6.2 The 3D modification of Jones to represent the other level illustrations

The two other level illustrations, not necessarily portrayed in the last blueprints of Jones, were actually made by modifying the original 3D model based on the beginner level of the character. This means that I literally edited a copy of my original model by moving vertices, edges and loops to a skinnier model for the next pose and to a more athletic and muscular one for the last pose. Additional loops where not needed since the model had the same detail in clothing in all of the stages. Furthermore since the

character was rather low poly, shaping the character into other physical structures didn’t cause me difficulties.

There is one matter I need to take explain at this point; as a 3D artist sculpting skills come in handy in situations like these, where the model is imported into a sculpting software and sculpted more practically into different shapes and consequently taken back to the 3D production software and rendered out over there. Unfortunately it is a skill that I still lack as a student and plan to practice in my next years of 3D self-study. 3D modeling and sculpting come hand in hand nowadays in the 3D working field. More clearly it is rather important to obtain an experience when modeling characters for example, to be able to switch between ordinary 3D software and 3D sculpting software as part of your regular workflow.

Nevertheless as the characters were modified into three different body structures, from a fat amateur to a healthy mediocre to a muscular professional, they were also easily skinned into the same armatures again and moved into their sought positions for render.

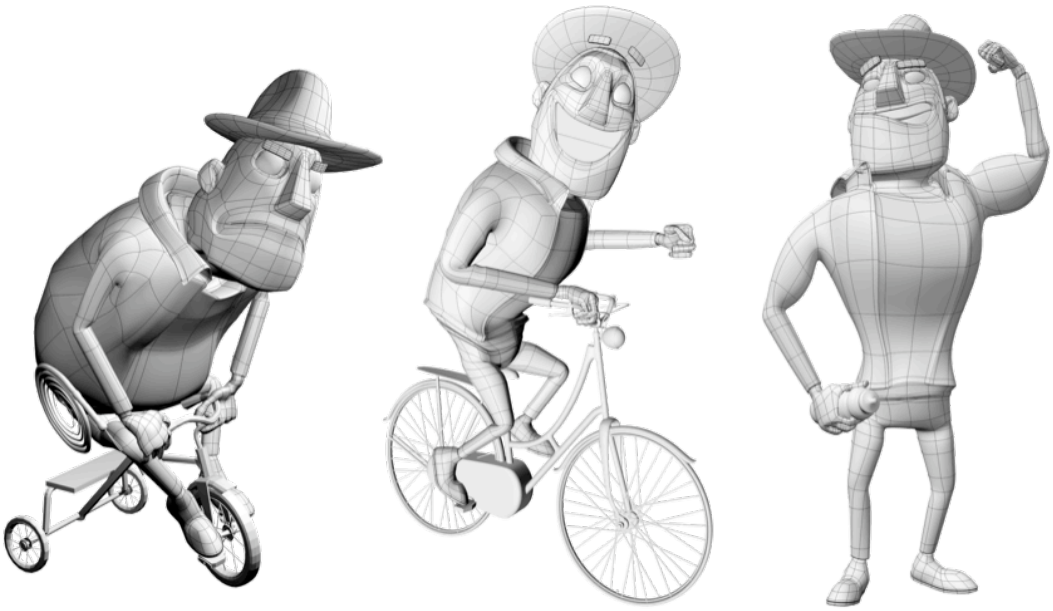

Figure 18. Wireframe renders representing the three versions of Jones. One can see that the wireframe structure is the same or rather comprised of the same amount of loops in all of the versions, since the character for each level was modified from the same original mesh.

6.3 Staging, camera angles and render

As for this part of the process, before we reach to the post processing and the color correction, we come to a last critical part of our process to produce an appealing character in this thesis. In my point of view, if this is done correctly, it might just grant you the benefit of avoiding certain polishing techniques that you might need for your character to stand out. And this is a stage that can be assimilated with any platform for which the design is made, whether it was mobile game, video game or typical film scenery. Creating a well done staging for your character can be the decisive factor on how appealing the character appears to the audience. Throughout my experience in character animation, I have known a simple method to examine the right staging for the character. That is the character's silhouette. This can be easily tested just by seeing the alpha of a character if rendered on a transparent background or just by turning the whole image of the character pose into black against a white background. This is an essential method to overlook how characters are posed, especially when it comes to still pictures. Since the target was to create still level visualizations of the character for the player, this part of the design was very critical to master at this point. If we examine the silhouettes of the three rendered positions of Jones in his three different stages of development, we can notice that it is clear of what the character is actually doing and what the silhouette represents in general after all.

Figure 20. One can notice through the silhouette of the rendered angles of Jones, what he is actually doing. Moreover, the mood is to some extent already delivered to us merely through the silhouettes.
Figure 19.

As for the camera angles it was designed so that the first level image would be taken slightly from above overlooking Jones, the mid-level would be slightly from the level of the character himself and in turn the last pro level to be taken from a low angle portraying Jones a dominating champion male character. On the other hand, when the first level is picturing Jones from above, it immediately creates the illusion of slight weakness, shame in a comical aspect and therefore puts the character in a rather minor vulnerable position. These are aspects I have learned throughout my work placement period as an animator and even before during my student years in animation. It is something that the artist should get the hang of in my point of view and this comes indeed with regular practice as any other aspect of character design and illustration.

While the characters where rendered out in the form that was represented above, the true stage of creativity and expressing my artistic methods had begun. The post processing happened in Adobe Photoshop image processing software. It wasn't merely color correction or removal of picture artifacts, rather it included painting various elements for the character ranging from his iris, pupils, beard, facial spots and shoulder bag to the grunginess of the shadow areas that had already been designed in the 2D illustrations of Jones. The look and feel was achieved mostly by this stage of production and so it had been planned, around seventy percent of 3D production and thirty percent of post image processing. There was no risk in this since we are talking about still images that were rendered out from the 3D software with a semi cell shading method including a few shade tones and little shadow. This made Jones a so called easy canvas to paint on. I had indeed used several types of paintbrushes to achieve the wanted visual outcome for the Jones. Setting up my brush settings with pen pressure and a good feather allowed me to paint the wanted trace on Jones. Below you can see the paintbrush preset and texture effect I had used on Jones to achieve a similar look as in the initial illustrations. Nevertheless let's bare in mind that the techniques I used below are not a universal law when it comes to texture painting, it is merely the artist's own perception and expression at this point of the process.

Figure 20. A grungy brush was used to paint over Jones' color corrected image to increase the retro print feel in his pictures.

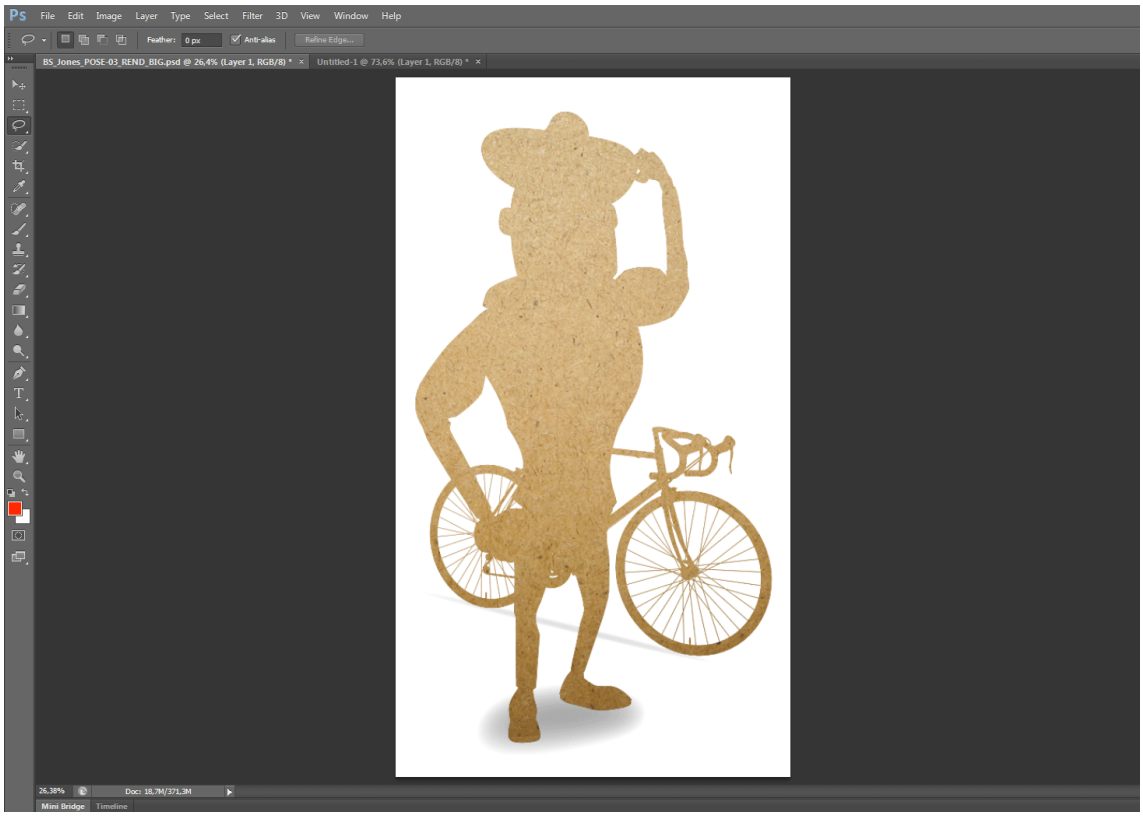

Figure 21. To further increase the feel of a grungy print as in 1950's-70's character illustrations, a paper mask was created in Photoshop to affect the overall image with "overlay" and "multiply" blending modes.

Since the first level adjustments and additions were made for the first level picture, it was much faster and more practical to apply the same color and paint effects on the rest of the images. Some of the brush effects were even used in a lighter manner on the other two pictures, especially the image representing the third level reflecting a cleaner and shinier version of Jones. Consequently the results of the three 3D character illustrations turned out to be as represented below. The format they were rendered into was *png* format files, each with a 1920 x 3408 resolution and a 32bit depth, which worked well for the purpose of their usage as slides that appear on top of a background in the game itself.

Figure 22. The illustration for the first level of Jones is supposed to illustrate the comical misery he is in. Although a fierce adventurer in the past he gets back on his feet beginning with a tricycle, giving a funny contrast to his size compared to the bike, Some elements like the beard, pupils and the shadow under his eyes were all painted in Photoshop.

Figure 23. The illustration depicting Jones' second level, Jones was rendered in Blender on a 3D -"granny" bicycle. This illustration expresses his optimism towards becoming a champion and successful adventurer. The fire torch was illustrated to be a 2D plane –like figure, which I wanted when trying to maintain a print feel in the illustrations.

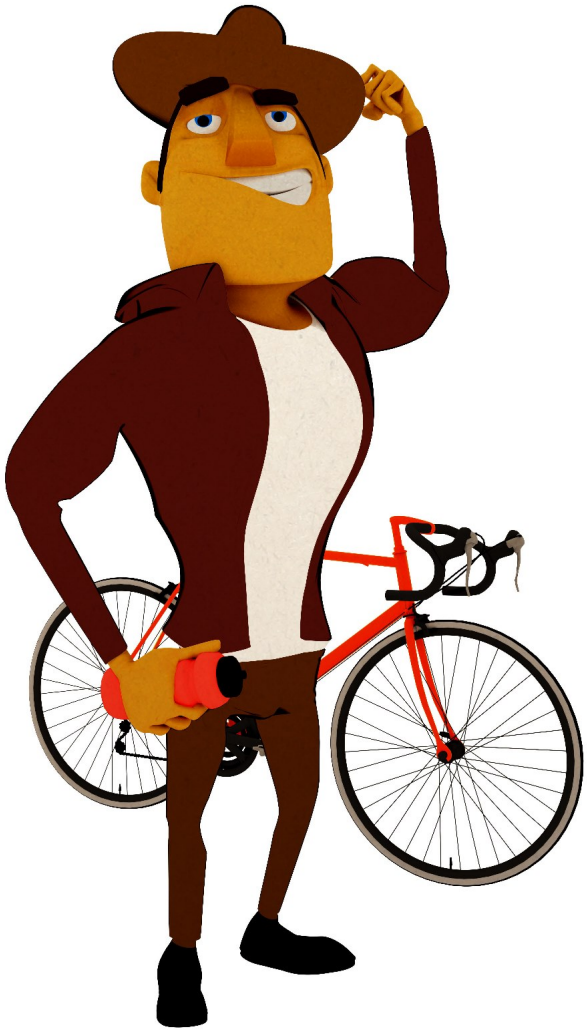

Figure 24. I rendered Jones for the third level with a wider chest and slimmer hips to exaggerate his athletic condition. The bigger biceps were made also to emphasize the powerful aspect of Jones. Even the water bottle and the racing bike, are supposed to illustrate that Jones is now a professional at what he does. The look and feel in the character's attitude was inspired by Hanna-Barbera's cartoon character "Johnny Bravo".

7 Outline and conclusion

First and foremost I would like to discuss at the end of this thesis to what extent the character design for Bike & Seek was successful. If we compare the outcome to our team's initial goals for the iOS game project in general, I can surely admit that it didn't represent quantitatively the target of our project. Midway through the production, we decided to keep things realistic and concentrate our goal into one character, although more level representations were hope rather than only three. By the last month of the project I suggested that it would be best to target three solid illustrations and hence it affected the game play in a way that the developing team agreed on coding the level of achievement into three skill sectors only, amateur, mediocre and pro. This was the first time I encountered a situation where my capabilities in design and production had decided the structure of the game. Compromises were to be made, especially when it was about delivering a submission for a competition by deadline. In this case team work was essential in terms of accepting what each member is capable of doing for the team during their free time. Qualitatively it was something that exceeded most of our expectations, even me, since we relied on the possibility of rendering still images with solid colors from Blender only to be implemented straight forward into the game. From the perspective of interactivity on the other hand, some might say that all of us had hoped for more. As a matter of fact, we had hoped that I had time to do short and simple animations for each character, as in eye blinks and small body movement, offering visual interactivity on the phone screen for the player. Again it was the deadline that determined these decisions.

As for the present moment, my work on Bike & Seek has stopped and the core development team is polishing and refining the game at the Nestholma workshop I had previously mentioned in my introduction. The application has a different target at the moment with the structure of the game and the idea of the game play changing into a slightly different genre. Even the title of the game is under a change to best support the current idea. Currently the team is working on a user-based structure without the option of fictional characters. This aids to cut costs on producing a large scale of characters and in the meantime makes the user of the app/game to be the hero of the journey. So the core idea of location based app/game still exists. There is not much that I can personally reveal right now, since the mobile game is not being published to the market yet, but the project is currently under construction with great modifications to come.

In order to summarize and clarify all of the points I have covered throughout this thesis, we need to acknowledge the purpose of this written work and what it can offer the future alumni of this and other similar undergraduate programs. The sole purpose of my graduation work is to give motivational and aiding guidance in the field of character design and more importantly how to produce such work taking different platforms such as a mobile device into account. Hence we covered the significance of the characters created for Bike & Seek and why I decided to use them as reference in my thesis in comparison with designing and creating characters for a smaller platform then a TV or a computer screen. This reminds the reader to take the purpose of his or her product heavily into consideration before starting to design it. This is a matter I truly recommend for anyone who is enthusiastic about this particular field and it is something that most of us in any creative field will encounter. I hope to leave this as a rather important advice for any creative enthusiast who is reading this work. As for character design, I have shared most of the significant parts I encountered through my experience and solid advice from book reference that have to do with this particular subject. My target was to go through the topic as chronologically as possible keeping in mind the whole process of the design from creating the story of the character and studying your design’s originality to leading your way into the actual drawing process of concepts and furthermore the blueprints that you are going to work with when creating a 3D model of your character. All of this information is of course supported with actual step-by-step material from the Bike & Seek project. As we reach the 3D production of our designs I suggest that one should bare in mind the importance of problem solving in this particular phase of production, otherwise 3D modeling, texturing, rigging and rendering might be a critical cause affecting the length of one’s production work. Therefore I used my experience from creating the 3D models and post processing them for Bike & Seek as reference when trying to convey this significant point to the reader.

The tools I hoped to provide when thinking about producing character art for platforms such as iOS, was rather approached from a perspective that studies the product’s format and the platforms software and graphical requirement. So I would suggest heavily considering factors like the file space and Heap space, when looking at the memory of the device for which the game is produced. Each software or system is defined by the version it is built on and the range of devices that run the system, in iOS's case, we basically took the latest iPhone 5 into account and the requirements that the Apple Store seeks for the products that are sold on their sites and applications.

As we take a look at the prospects of character design's future in mobile gaming, one can assume that it is vastly changing in terms of technical developments, software, style, graphic enhancements, 2D or 3D etc. As Lawrence Wright (NFGMan) explains in his book *Character Design for Mobile Devices,* that there is a huge difference when comparing designing games to a specific console or a computer with similarly creating games to a huge number of different mobile devices that "these games must be ported to." He then adds: "The big difference is that a cellphone game has to look good and play well on potentially hundreds of phones, each with its own unique resolution, memory, and processor limitations." (Wright, 2006. 78-79). Keeping in mind that this book was published in 2006, this still applies on the future of character design for small platforms like iOS with huge potentials nowadays. Furthermore this means that even 3D character artists as well as 2D character artists are needed more and more in the field of mobile game development where games for platforms such as iOS, Android and Windows are being continuously produced. As for my own ambition in the particular field of 3D character design, I can conclude by expressing my grown interest towards manifesting my future skills in this particular market niche that proves its popularity amidst numerous potential businesses and a booming number of customers.

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